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IS 2023 (1993): Metallic chromium [MTD 5: Ferro Alloys]

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भारतीय मानक

क्रोमियम धातु – विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

CHROMIUM METAL — SPECIFICATION

(Second Revision)

UDC 669·26

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

June 1993

Price Group 1

Ferroalloys Sectional Committee, MTD 05

FOREWORD

This Indian Standard (second revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Ferroalloys Sectional Committee had been approved by the Metallurgical Engineering Division Council.

This standard was first issued in 1962 and was subsequently revised in 1973. In view of the experience gained during these years it was felt necessary to revise this standard. The following main modifications have been made in this revision:

a) Limits of aluminium and iron content for grade MCr97C05 has been revised to 0·50 Max and 0·35 percent respectively and the limits of other impurities N_2 and O_2 been included.

b) particle size range has been modified.

c) Informations to be given while ordering the material have been incorporated for the benefit of the purchaser, and

d) New clauses have been incorporated to avoid wide segregation of the chemical constituents, thereby safeguarding the small consumers of this product.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CHROMIUM METAL — SPECIFICATION

(Second Revision)

1 SCOPE

This standard covers the requirements of chromium metal used in Chromium bearing alloys.

2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
1387 : 1967	General requirements for the supply of metallurgical materials (*first revision*)
1472 : 1977	Methods of sampling ferro-alloys for determination of chemical composition (*first revision*)

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Chromium Metal

An alloying material with a minimum chromium content of 97 percent by mass obtained by metallothermic/electrolytic reduction.

3.2 Cast (Melt)

The product of any of the following:

- a) one furnace heat, or
- b) one tap of continuous furnace, or
- c) a number of furnace or crucible heats of similar composition mixed in a ladle or holding furnace and used for making a cast.

3.3 Consignments

Chromium metal shall be delivered in consignments constituted by one of the following methods.

3.3.1 *Tapped Lot Method*

A consignment constituted by the tapped lot method consists of a chromium metal mass of one melt (or one part of a continuous tap).

3.3.2 *Graded Lot Method*

A consignment constituted by the graded lot method consists of a number of melts (or parts of continuous taps) of one chromium metal designation.

The chromium metal content of the melts (or parts of continuous taps) constituting the consignment shall not differ from each other by more than 3 percent.

3.3.3 *Blended Lot Method*

A consignment constituted by the blended lot method consists of a number of melts (or parts of continuous taps) of one grade designation, which have been crushed to a particle size less than 50 mm and thoroughly mixed.

The content of the main constituent of the melts (or parts of continuous taps) constituting the consignment may vary between the minimum and maximum limits specified for the appropriate grade designation.

4 GRADES

This standard covers 2 grades of Chromium metal, as specified in Table 1.

5 PARTICULARS TO BE SPECIFIED WHILE ORDERING

For the benefit of the purchaser, particulars to be specified while ordering for the material to this specification shall be as follows:

- a) quantity of the material;
- b) constitution of consignment;
- c) name of the material;
- d) grade designation; and
- e) size designation;
- f) necessary requirements for analysis, and reports, packing etc. as appropriate.

6 SUPPLY OF MATERIALS

General requirements relating to supply of the material to this specification shall be as laid down in IS 1387 : 1967.

7 REQUIREMENTS

7.1 Constitution of Consignment

Chromium metal shall be delivered in consignments constituted by one of the methods defined in **3.3**.

7.2 CHEMICAL COMPOSITION

7.2.1 Each consignment of the material shall conform to the requirements of the chemical composition specified in Table 1 and if so specified by the purchaser at the time of enquiry and order, the manufacturer shall supply a test certificate of chemical analysis of the sample of material for each melt.

7.2.2 If specified by the purchaser at the time of enquiry and order that each lumps of the consignment should conform to the chemical composition specified in Table 1, this shall be agreed to between the purchaser and the manufacturer.

NOTE — The material belonging to a cast (melt) which is out of specification, shall not be blended or mixed with the material of another cast/melt.

7.3 The chemical composition given in Table 1 shows only the main constituent elements and usual impurities. If the purchaser requires closer ranges for the main element contents and/or different limits for specified elements and/or non-specified elements, this shall be agreed to between the purchaser and the manufacturer.

7.4 The chemical composition of the material shall be determined by any other established instrumental/chemical method. In case of dispute the referee method shall be agreed between the purchaser and the manufacturer till the Indian Standard is published for the methods of chemical analysis of chromium metal.

8 SIZE

8.1 Unless otherwise specified the material shall be supplied in lumps or as crushed and screened particles. The particle size ranges and tolerances shall be as given in Table 2. The under size values shall be valid at the point of delivery to the purchaser.

8.2 If the purchaser requires particle size ranges and/or tolerances other than those given in Table 2, these shall be agreed upon between the supplier and the purchaser. The under size values shall be valid at the point of delivery to the purchaser.

9 EXTRANEOUS CONTAMINATIONS

The material shall be reasonably free from extraneous contaminations like slag and non-metallic inclusions, etc.

10 SAMPLING

Each consignment of the material shall be sampled in accordance with IS 1472 : 1977.

11 PACKING

The material shall be packed in suitable containers, in quantities as mutually agreed to between the supplier and the purchaser.

12 MARKING

The package containing the material shall be marked with the following:

a) supplier's name or trade-mark,
b) grade number and size designation,
c) quantity,
d) date of manufacture, and
e) shelf life, if required.

The material may also be marked with the Standard Mark. The information is available with Bureau of Indian Standards.

Table 1 Chemical Composition of Chromium Metal

(*Clause* 8.1)

Grade Designation	Percent								
	Cr *Min*	Al *Max*	C *Max*	Fe	Si *Max*	S *Max*	P *Max*	N_2	O_2
(1)	(2)	(3)	(4)		(5)	(6)	(7)	(8)	(9)
MCr97C06	97·0	0·50	0·06	0·35	0·5	0·05	0·05	0·05 to 0·02	0·05 to 0·1
ECr99	99·0	0·1	0·05	0·2	0·2	0·05	0·05	0·05 to 0·02	0·05 to 0·1

Table 2 Particle Size

(*Clause* 8.2)

Size Designation	Size Range mm		Undersize, Percent by Mass *Max*	Oversize, Percent by Mass *Max*
	Over	Up to and including		
(1)	(2)	(3)	(4)	(5)
1	15	50	5	10
2	5	15	5	10
3	2	5	5	10
4	—	2	—	10

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices:

Office	Address	Telephone
Central	Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	331 01 31 331 13 75
Eastern	1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola CALCUTTA 700054	37 84 99, 37 85 61 37 86 26, 37 86 62
Northern	SCO 445-446, Sector 35-C, CHANDIGARH 160036	53 38 43, 53 16 40 53 23 84
Southern	C. I. T. Campus, IV Cross Road, MADRAS 600113	235 02 16, 235 04 42 235 15 19, 235 23 15
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